

WHAT IS CLAIMED IS:

1. A piezoelectric power generator utilizing a square thin piezoelectric ceramic element (1) which is made by uniformly baking or plating a metal of good conductance or the like onto both the upper and lower surfaces of piezoelectric ceramic element 1 to provide electrodes such that said metallic electrodes remain in the proximity of but inside a boundary of piezoelectric ceramic element 1 wherein an electrode on the upper surface is designated as (+) electrode (2); and an electrode on the lower surface designated as (-) electrode (3).
2. A piezoelectric element array (10), which is a basic unit of piezoelectric power generation, comprising:
 - multiple rectangular thin film piezoelectric ceramic elements (1) as set forth in Claim 1; and
 - a (+) electrode made of a thin plate having good conductivity is given a shape close to said rectangular thin film piezoelectric ceramic element (1) and arranged at a first end or a second end of the rear side portion of said electrode plate (4);
wherein a second piece of said electrode plate (4) is flipped putting output terminal portion (5) at the opposite end, thereby designating said (-) electrode plate (4) as electrode plate (6) and output terminal portion (5) is flipped together as output terminal portion (7); a thin film insulation sheet is shaped as a rectangle to approximate the shape of said rectangular thin film piezoelectric ceramic element (1), thereby designating said thin film insulation sheet as insulation sheet (8);
wherein said rectangular thin layer piezoelectric ceramic element (1) is made into an element set (9) by attaching a (-) electrode plate (6) on (-) electrode (3) to the lower surface thereof and a (+) electrode plate (4) on (+) electrode (2) to the upper surface thereof;
wherein multiple elements sets (9) are stacked in such a manner that insulation sheets (8) are placed between and top and bottom of the sets to stabilize electric charge thereof; the entirety of said sets are designated as piezoelectric element array (10); spring-type plates are adopted only on the top and bottom surfaces of said piezoelectric element

array; and the side where input or outputs terminal are present is used as stationary portion (11), thereby providing a basic unit of power generation.

3. A piezoelectric element array (12) in which a multiple number of rectangular thin piezoelectric ceramic elements (1) are flipped alternately such that (-) electrodes (3) contact each other while (+) electrodes (2) contact each other; electrode plate (6) is inserted in the area where (-) electrodes (3) contact each other putting input terminal (7) at the rear end; (+) electrode plate (4) is inserted in the area where two (+) electrodes (2) contact each other putting output terminal (5) at the rear end; the surface of (+) electrode (2) which is on top of rectangular thin film piezoelectric ceramic element (1) is covered by a spring-type insulation sheet (8), shaped in the same manner as element (1); the surface of (+) electrode (2) which is at the bottom of the flipped rectangular thin film piezoelectric ceramic element (1) is attached to spring-type electrode plate (4) by pressure; and insulation sheet (8) is placed under (+) electrode plate (4), the side on which the input and output terminals are present, said side being utilized as stationary portion (13), which defines a basic unit for piezoelectric power generation.

4. A piezoelectric element array which utilizing a bimorph type piezoelectric element instead of the monomorph type as set forth in Claim 3.

5. A power generation portion unit of the piezoelectric power generator comprising: a horizontal channel whose width is equal to the total thickness of either a piezoelectric element array (10) or (12); and a holding flange portion (15), which has a conduction circuit space (16) at the deep end of the channel so as to fully house stationary portion (11), output terminal (5), and input terminal (7); in conduction circuit space (16) are arranged an output electrical pickup plate (17) or an output electrical pickup line, and an input electrical pickup plate (18) or an input electrical pickup line, that are connected to an electrical circuit in a separate compartment; the stationary portions (11) or (13) of piezoelectric element arrays (10) or (11) is secured onto holding flange portion (15) of mounting base (14); all output terminals (5) are connected to output electrical pickup plate (17) or an output electrical pickup line installed within conduction circuit space

(16); all input terminals (7) are connected to input electrical pickup plate (18) or input electrical pickup line in a similar manner; wherein said power generation portion unit of the piezoelectric power generator has a movable side, which is the front side of piezoelectric element arrays (10) or (11), defined by said movable side of stationary portion (11) of piezoelectric element array (10) or stationary portion (13) of piezoelectric element array (12), wherein stationary portions (11) and (13) are secured to holding flange (15).

6. A method of pressing the piezoelectric element of a piezoelectric power generator having a power generation unit for a piezoelectric power generator as set forth in Claim 5 wherein pressure element (20), which is parallel to the length direction but has a peak thereof along the center line of curvature, moves up and down causing said movable portion to push against and flex piezoelectric element arrays (10) or (12) of power generator (19).

7. A power generation element array holding device of a rectangular thin film piezoelectric ceramic element [(1)] further comprising an upper curvature guide (21), provided on top of holding flange portion of mounting base (14) of said power generation unit of said piezoelectric power generator as set forth in Claim 6; wherein said upper curvature guide (21) has the same length as the movable portion and the surface curvature thereof is equated with the surface curvature of pressure element (20).